

Barriers and Facilitators to Treatment among Newly Diagnosed Hypertensive Patients in Nepal: a Qualitative Study

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Abstract

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Background: Hypertension, a leading risk factor for cardiovascular disease, is a significant and rising burden in Nepal. The disease remains undetected and inadequately managed. However, no studies have been conducted to understand the inhibiting and facilitating factors to hypertension treatment among newly diagnosed cases.

Objective: This qualitative study aimed to explore barriers and facilitators to treatment among newly diagnosed hypertensive patients aged ≥ 18 years from patients' and providers' perspectives.

Method: We conducted seven focus group discussions with newly diagnosed hypertensive patients and eight in-depth interviews with health care providers. Audio-taped discussion and interviews were transcribed, inductively coded and analyzed by thematic framework method using Atlas ti.7.

Results: Hypertension was viewed as a rising problem in the community. The barriers to treatment included: absence of symptoms, reluctance to take medicine, low perceived seriousness of hypertension and its outcome, negligence (lack of self-care), lack of family

support, uncontrolled diet during feast and festivals, social drinking, lack of communication and trust of provider, and lack of resources in health care institutions. Factors facilitating treatment included: fear of consequences, self-awareness and self-care, self-reminding strategies, family support, counseling by health care providers, and availability of adequate health care resources. The participants suggested solutions to include the need for greater awareness, screening and routine monitoring of blood pressure, making resources available in health institutions, and training of health workers.

Conclusion: A number of factors emerged as barriers and facilitators to hypertension management from patients' and the providers' perspectives. This information is useful to design individual, social and health system levels of interventions to improve hypertension management.

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LIST OF ACRONYMS

BMI	Body Mass Index
BP	Blood Pressure
CVD	Cardio-vascular Disease
DBP	Diastolic Blood Pressure
DHO	District Health Office
DHS	Dhulikhel Heart Study
FCHV	Female Community Health Volunteers
FGD	Focus Group Discussion
FPO	Family Planning Officer
HTN	Hypertension
IDI	In-depth Interview
LMICs	Low- and middle-income countries
NCD	Non-communicable Disease
OPD	Out-patient Department
PHCC	Primary Health Care Center
SBP	Systolic Blood Pressure
UHCC	Urban Health Care Center
WHO	World Health Organization

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1. INTRODUCTION

Burden of Hypertension

Hypertension is the leading risk factor for cardiovascular disease (CVD) and mortality worldwide, and is responsible for 13% of the total deaths and 7% of the global burden of disease (1, 2). It affects about 1 billion people worldwide; of these, two thirds are in developing countries (3). It is predicted that up to 1.58 billion adults worldwide will suffer from the complications of hypertension by 2025(4).

Trends in hypertension management have improved substantially in high income countries due to strong public health policies and widely available diagnosis and treatment (2). However, in low-and middle-income countries (LMICs) countries, the prevalence of uncontrolled hypertension has increased resulting in heart disease and stroke. One out of three adults are affected by hypertension in South-East Asian countries including Nepal (5, 6).

Nepal is undergoing a demographic and epidemiologic transition resulting in a double burden of disease. CVD is emerging as one of the major non-communicable diseases (NCD) in the country (7). Although the recent advances in the diagnosis and treatment of hypertension have been shown to prevent CVD, it still remains inadequately managed in many LMICs including Nepal (8). The first hypertension survey among adults of ≥ 21 years of age in Nepal conducted in 1982 reported 6% hypertension prevalence according to the World Health Organization (WHO) criteria recommended at that time, systolic blood pressure (SBP) ≥ 160 mm Hg, or diastolic blood pressure (DBP) ≥ 95 mm Hg(9). A repeat cross-sectional study showed a three-fold increment in the prevalence of HTN over 25 years in eastern part of Nepal(10). The prevalence of hypertension as reported by National NCD risk factor survey in 2013 was 25.7% in adults aged

15 to 69 years (7). The reasons for the increasing prevalence of hypertension were reported to include ageing of the population, unhealthy behaviors, harmful use of alcohol, lack of exercise, excess weight and persistent stress(2, 5).

Barriers and facilitators to hypertension

Several studies have recommended raising awareness of hypertension, treating patients with medication along with lifestyle change, and increasing follow-up or adherence to medication in order to control this hypertension at the population level (11). However, implementation of these recommendations at the ground level are often prone to failure due to barriers related to patients and providers. Some of the barriers previously reported at the patient level have included lack of awareness of the condition, patient's belief that hypertension is treatable and the medicine should be taken for lifelong, poor adherence to medication, low motivation for treatment and lifestyle changes, and lack of support from the family (11-14). A qualitative study conducted in the US found that African American women defined hypertension to be a condition of 'nerves' that was highly unpredictable, difficult to control and potentially fatal (15). Another study on patient's perspective of hypertension done in Canada found that patients struggled to define hypertension; only half of them (54%) could recall their targeted blood pressure threshold (16). A study conducted in cardiac camp in Nepal (2007) reported higher knowledge score among respondents with heart disease or a close family member suffering from heart disease. However, majority of them (75.5%) did not know about the normal blood pressure range in an adult(17). Another study on CVD assessment in 2013 reported that nearly half of the participants (44%) lacked sufficient understanding of the cause and its prevention; only 13% of the participants stated hypertension as a risk factor for CVD (18). A study in eastern Nepal by Bhandari B et al (2015) reported that

more than half of the non-adherent participants did not know about the complications of hypertension and had irregular follow-up (13). This corresponds with studies done in other countries (19). More recently, a cross-sectional study in a sub-urban population of Nepal, Dhulikhel, reported that almost half of the participants (43.1%) could not state at least one risk factor of hypertension, although males had higher knowledge than females (20).

Studies showed contrasting opinions between knowledge and its application to manage hypertension (13, 17). A study of CVD knowledge assessment in suburban population of Nepal (18) reported that although participants knew that behavioral modification can prevent CVD, most of them did not want to alter their lifestyle (18). Some barriers reported by this study, similar to other studies on diet control, involved difficulty in modifying existing habit for various reasons including peer pressure for smoking and drinking, food culture, lack of social support. Barriers to increasing exercise included lack of motivation or routine, laziness, weather, and disability/injury (4, 16, 21-25).

Hypertension is a silent killer that rarely causes symptoms (2). In low resource settings, people usually do not seek health care until they experience symptoms of the disease (15, 26). So, the disease is usually diagnosed when a patient seeks medical care for a condition other than hypertension (23). In a systematic review on lay perspectives of hypertension and drug adherence, participants in the 16 of the 53 studies reported that they did not experience any symptoms. And, participants in the 27 studies reported symptoms like headache and dizziness. In addition, 11 studies done in different countries showed that majority of participants used presence or absence of symptoms as an indication to high blood pressure (19). Furthermore, the

belief that hypertension can be cured resulted in patients discontinuing medication when they felt better and they believed that their blood pressure was under control (12, 23, 25, 27).

Studies have reported that hypertension is either untreated or inadequately controlled in approximately two-thirds of hypertensive people; many of them are yet undiagnosed (8, 23, 28, 29). Gregoire J.P. et al. conducted a prospective cohort study among patients (newly diagnosed or previously diagnosed) who were newly prescribed anti-hypertensive drugs in Canada from February 1996 to March 1999. The study reported that 43.3% of patients discontinued their medication at the end of the observation period of 18 months(30). The latest NCD survey in Nepal reported that among hypertensive patients, 9 out of 10 were not on medication (7). A community based study in the western region of Nepal reported that 64.4% of treated patients were non-adherent (31), while in the eastern region it was 43.5% (13). Important predictors of non-adherence were illiteracy, the cost of medicine, family history of hypertension, irregular follow up, more than one pill prescribed per day and forget to carry medicine while away from home (14).

It is important to understand health system related barriers to effectively manage hypertension (41). A systematic review conducted in 2014 reported health system problems as the most commonly reported barrier by providers. It further stated that there is a dearth of studies related to identifying barriers as viewed by providers in LMICs, such as India, Brazil and South Africa. The reported barriers included shortage of equipment, staff and space (11). Similarly, other health care related barriers reported were provider's lack of time for consultation, communication skills, provider's rude attitude towards caring patients, and preference of having same doctors to manage their treatment (22-24, 32, 33).

In addition to barriers, reviews have shown that social support, creation of daily routine for medicine intake, time management, insurance, and good provider-patient relationship are key factors in motivating patients to control and manage their hypertension (2, 16, 25, 34). Similarly, a study done in Nepal reported that support from family in lifestyle modification, stress reduction, protection from negative information from outsiders, and finances were important facilitating factors to initiate and adhere to treatment(35).

Rationale of the study

Despite the burgeoning burden and future impact, the awareness, detection and control of hypertension is low. Its management is a challenge for resource-constrained countries like Nepal due to its escalating burden, associated complications and high cost for treatment. Therefore, it is important to develop an effective approach to understand hypertension control, which requires the involvement of stakeholders at different levels in order to understand barriers to effective management. Most of the research conducted thus far in Nepal has been focused on medication adherence in patients diagnosed with prevalent disease. There are none to our knowledge that address newly diagnosed patients. Studies have shown that 30% to 60% of newly diagnosed hypertensive patients discontinue their medicine within the first year of care, and only 20% to 65% remain on therapy after 3 years. Out of those who remained in treatment, 40% to 70% are adherent (32). Moreover, previous studies have primarily focused on those patients who sought medical care, but not on those who did not seek medical care after diagnosis. Therefore, this study aims to explore barriers and facilitators to hypertension control among newly diagnosed hypertensive patients, who either sought or did not seek medical care after diagnosis, from both the patients' and providers' perspectives. To the best of our knowledge, this is the first qualitative study of its kind in Nepal. Results of the study will help in designing community

based interventional programs on addressing hypertension management in newly diagnosed patients.

2. OBJECTIVES OF THE STUDY

2.1 Overall Objective

To determine perspectives of patients and health care providers on barriers and facilitators to hypertension treatment among newly diagnosed hypertensive patients in a suburban community in Nepal.

The specific aims of the study are provided below:

2.2 Specific aims

- To determine knowledge, attitudes and practices related to hypertension risk reduction and treatment among newly diagnosed hypertensive patients using focus groups discussions (FGD).
- To understand health providers' perspectives of barriers and facilitators to counseling and treatment among newly diagnosed hypertensive patients using key informant interviews.

3. STUDY METHODS

3.1 Study design and setting

This is a qualitative study embedded in a larger cohort study, the Dhulikhel Heart Study (DHS). The DHS aims to estimate the incidence and prevalence of cardiovascular disease (CVD) and its risk factors in a sub-urban community of Nepal. The first wave of the study recruited 1,073 adults 18 years of age or older and identified 321 (30%) hypertensive participants in the community. The present study was conducted among the hypertensive participants of the DHS and the health care providers of Dhulikhel town in central Nepal.

3.2 Sample and recruitment

There were two target groups for the study: (1) Hypertensive patients, and (2) Health care providers.

Selection and recruitment of hypertensive patients:

We conducted FGD to explore patients' common perceptions on hypertension including their knowledge, attitudes, beliefs and practices, as well as what they believed to be barriers and facilitators of health care. We stratified the hypertensive patients into four groups to maintain homogeneity within the groups to identify major variations and themes. The four groups were comprised of the following categories of newly diagnosed hypertensive patients: (1) those who did not seek health care at all; (2) those currently on treatment but not compliant; (3) those who were currently on treatment and were compliant; and (4) patients who were initially measured with high blood pressure but the hypertension was not confirmed (i.e. false positives).

During the DHS, hypertensive participants received a Blood Pressure Referral card and were asked to go to a health institution for a consultation. The data collection at that time was done from April 2014 to February 2015. For this study, the DHS research staff telephoned the

participants to ask if they had sought the health care after receiving the referral. For those who sought health care and were prescribed medicine, the staff asked if the patient was compliant to the medicine. Medicine compliance was measured using the Morisky's Medication Adherence scale-8 (36, 37): participants who scored ≥ 1 point in the Morisky's scale were defined as non-compliant.

The target population of this study comprised of 161 newly diagnosed hypertensive patients (blood pressure measurement of SBP ≥ 140 mm Hg, or DBP ≥ 90 mm Hg). We contacted 105 participants via phone. If the participants could not be contacted by phone, we called their family members (n= 29) or visited their home (n= 27). We excluded 35 participants for the following reasons: did not receive referral (n=8), not at home (n=23), died (n=1), mental illness (n=1), and prevalent cases (n=2). Among the 126 participants who were included in the study, we approached 80 participants. Among them, 43.8% (n=35) attended the discussions, 36.3% (n=29) declined and 20% (n= 16) wanted to participate but could not because of their medical reasons (n=9), family reason (n=1) and busy at work (n=6). Of those who were not approached, 40 of them belonged to the group of patients who were initially measured with high blood pressure but the hypertension was not confirmed, and 6 belonged to those who did not seek health care at all. We did not approach these patients as we did not get any new information from the last FGDs of each group.

Selection of health care providers

Health care providers from a hospital, a primary health center and a district health office were selected to explore a variety of perspectives on the health system and their challenges. The target health care providers included (a) physicians (b) auxiliary health workers (c) health supervisors and (d) female community health volunteers working in Dhulikhel.

We contacted eight health care providers via phone or in person and briefed them about our study. All of them agreed to participate. On receiving informed consent, we interviewed them in a convenient and private place, such as a separate room at home or in a clinic.

The providers were two medical officers (physicians) from Dhulikhel Hospital, one in-charge of Primary Health Care center (physician), two in-charge of urban government clinics (Certificate in General Medicine), two Female Community Health Volunteers (FCHVs), and a family planning health officer (FPO) from the District Health Office (DHO). The FCHVs and FPO are not direct health care providers. FCHVs are ground level volunteers who work for social mobilization in regular government health programs, especially maternal and child health care. The officer at the DHO is a program supervisor who specifically oversees the family planning programs. Considering the busy schedule of DHO and in the absence of focal person on non-communicable disease, we interviewed the FPO. The FPO had experience working for the national level NCD surveillance.

The study was approved by the Kathmandu University School of Medical Sciences Institutional Review Committee and the University of Washington Division of Human Subjects. Permission was also received from the District Health Office to conduct interview with the government health providers.

3.3 Data collection

We collected data from December 12, 2015 to March 3, 2016. All FGDs were conducted on Saturdays as it was a convenient day for most participants. The interviews were completed on work days.

Focus Group Discussion

In order to explore information, pre-determined, open ended questions were prepared by a way of guided interview. The discussion was based on four main domains: (1) knowledge, attitude, and practice regarding hypertension in general, (2) barriers to health care, (3) facilitators of health care, and (4) management of hypertension. The guideline was piloted with prevalent hypertensive cases in order to check the length of the FGD and to make any necessary modifications to the questionnaire.

All FGDS were conducted in the national language (Nepali) and was facilitated by the investigator. We audiotaped the discussion and took notes during each session. Group size varied from 4 to 7, and sessions lasted 55 to 90 minutes. FGDs were conducted either in a private space in a school or on the Dhulikhel hospital premise.

We began each session with introductions, and a brief explanation of the study and how confidentiality would be maintained. All participants were encouraged to put forward their opinions. The questions on knowledge and attitude were similar for all the groups. Questions were probed to get in-depth information on the particular subject matter. We offered light fruits as snacks in appreciation for their time in the discussion and thanked them for their participation.

In-depth Interviews

We conducted in-depth interviews to gain information regarding providers' perspectives on the patients' knowledge, attitude and practice related to hypertension; burden of hypertension, and barriers and facilitators of managing hypertension in the community. All interviews were conducted in Nepali by the investigator and were audiotaped. The interviews lasted 27 to 72 minutes. The interview questionnaire was piloted with a physician working in the Dhulikhel Hospital and was revised as needed.

3.4 Data analysis and management

Audio recordings from the FGDs and the IDI were transcribed verbatim in Nepali. Data were analyzed using a thematic framework method (38). The investigator and a co-researcher read and reread three transcripts (two FGDs and one interview) and independently coded them. The themes and codes were discussed and agreed upon. The investigator then developed a codebook in English. She examined the interview and discussion transcripts line by line to identify the text units and categorized each according to the codes using a qualitative software package (Atlas ti.7). Data were charted and interpreted. Selected quotes were then translated into English for the report.

4. RESULTS

We conducted seven focus group discussions (FGDs) with 35 participants. The characteristics of the participants are presented in Table 1. Most participants were 40 years or older, male, Newar, Hindu, and married. About 17% did not have formal education and were unemployed.

Table 1: Socio-demographic characteristics of patients

Characteristics	N (%)
Age group	
20-39	7 (20.0)
40-59	23 (65.7)
>60	5 (14.3)
Gender	
Male	26 (74.3)
Female	9 (25.7)
Ethnicity	
Newar	25 (71.4)
Brahmin	5 (14.3)
Tamang	4 (11.4)
Religion	
Hindu	31(88.6)
Non-Hindu	4 (11.4)
Marital status	
Married	31 (88.6)
Not married	4 (11.4)
Education	
No formal education	6 (17.1)
Primary level education	10 (28.6)
Secondary level	13 (37.1)
High school or more	6 (17.1)
Occupation	
Employee	6 (17.1)
Self-employed*	20 (57.1)
Home maker	6 (17.1)
Others**	3 (8.7)

*Self-employed include business and agriculture

**others include non-paid job, student and unemployed.

We also interviewed eight health providers from different level of health services which are given below. The FCHVs and FPO are not the direct health care providers, but we interviewed them to get community perception, health care related barriers and facilitators to hypertension and their roles in hypertension management.

Table 2: Job title and represented institution of health care providers

Job title	Institution	N
Medical Officer	Tertiary hospital	2
Medical Officer	Primary Health Care Center (PHCC)	1
Family Planning Officer (FPO)	District Health Office (DHO)	1
Auxiliary Health Workers	Primary Health Care Center (PHCC)	2
Female Community Health Volunteer (FCHV)	DHO	2

Result reported here are based on the conclusion drawn from the FGDs and IDIs and are presented under five main headings: (1) Perceived burden of hypertension, (2) Knowledge of hypertension, (3) Barriers to treatment and care, (4) Facilitators to treatment and care, and (5) Suggestions to improve hypertension management. Barriers and facilitators are further categorized into individual, social and health care related factors. The summary of list of themes and its categories are provided in appendix 1.

The results on patients' and providers' perspectives are presented separately.

Hypertension: patient's perspective

1 Burden of hypertension

The common terminologies for hypertension in the community were 'BP' (blood pressure), 'pressure', and 'pressure high'. A literal translation of blood pressure in Nepali is 'Uccha raktachap', however it is not popular in use. The participants said that hypertension is common and cases have been increasing in the community. As described by one participant:

"It's like normal these days...people dying...when a person dies, they say that he might have high blood pressure...if not, heart attack...nowadays, whoever dies, people say he might have died because of pressure." (P2, male, FGD 1)

2 Knowledge of hypertension

2.1 Meaning of hypertension:

Most participants defined high blood pressure in varieties of ways, while few of them could not define it. Many defined blood pressure as disorders of poor diet, alcohol and stress. Some related it with the symptoms like dizziness, headache, anger, eye burn, and with complications such as heart attack and paralysis. While some defined high blood pressure as an increase in heartbeat, only few of them mentioned about fluctuation in the amount of blood flow in the body.

Interestingly, one participant mentioned that high BP might occur when blood is spoiled 'ragat bigrera'.

"....she asked me what is high blood pressure, and I replied that blood increases when it gets dirty." (P1, female, FGD 2)

Furthermore, majority of participants did not know the normal blood pressure range.

"We don't know up to what range should it be called pressure and up to what range it should be called no pressure." (P4, male, FGD 3)

2.2 Causes of hypertension:

There were mixed opinions on the causes of hypertension. Most of the participants linked hypertension with diet rich in fats, oil, spices, and salt. Male participants mentioned alcohol as a major factor as they personally felt a rise in blood pressure after alcohol consumption. After drinking alcohol, they got headache, which was considered as a symptom of high blood pressure. Several participants mentioned that lack of physical activity and smoking were associated with hypertension. Two participants mentioned sleeplessness as a probable cause.

In all FGDs, stress was repeatedly mentioned as a cause of hypertension. A female participant who runs a small business explained that her high blood pressure was due to stressful interactions with her clients:

“[I] mostly have to sit in the shop, have to talk with people. Sometimes this sort of people come, sometimes that sort of people come. Sometimes good ones come. I feel like my pressure went up because of dealing with those persons.” (P4, female, FGD 4)

Age and genetics were reported by very few participants as a cause of hypertension. Upon further probing into genetics, participants gave mixed answers, but they were mostly confused. We also found some misconceptions regarding the cause of hypertension in the community. Few participants believed that there is no definite cause of hypertension and it can happen to anyone irrespective of their lifestyle. Three participants mentioned that hypertension is caused due to weakness when people do not eat on time. Some thought that smoking does not affect hypertension, and only cause lung diseases. Interestingly, one participant said that high blood pressure could be transmitted through breathing:

“I sleep together with my sons, and it transmits through breathing. I doubt that it will affect my heart.” (p1, male, FGD 3)

2.3 Complication of hypertension

Heart problem, paralysis, and eyes problem were the predominant complications reported by participants. Some mentioned brain hemorrhage, stroke, bleeding from nose, diabetes, and kidney problem, whereas few did not know about any complications. Knowledge of complications appeared to be based on what participant's had seen in their family and community.

2.4 Hypertension treatment

Many participants believed that hypertension can be cured 'Niko huncha' if we could strictly control diet, and take medicines regularly. The following statement reflects one participant's strong belief that the disease can be cured:

"Well, that's a curable disease. There is no disease in this world that cannot be cured. Every disease in this world is curable. That's why it is a curable disease. Every disease can be cured if we eat on time. That's why, in blood pressure disease, it is cured after sometimes of getting high BP." (P5, male, FGD 5)

2.5 Hypertension medication

Most participants knew that anti-hypertensive medicine needs to be taken lifelong. However, a few of them were confused. They said that have received contradictory information regarding hypertension medication.

"It is said this medicine should not be discontinued. If pressure's medicine is started, it should be taken regularly. Some said [we] cannot [leave], some said we can, what is this in real" (P7, male, FGD 1)

Furthermore, one participant who is on medication stated that she feels it is safe even if she forgot to take medicine for a day as her BP was not that high.

2.6 Hypertension prevention and control

Participants uniformly stated that hypertension could be prevented and controlled through diet modification, exercise and stress reduction. There was, however, mixed opinion on the adequate

level of exercise. Many participants thought that usual household chores such as cooking, washing clothes, or climbing up and downstairs at home was adequate physical activity whereas some thought the exercise is only adequate when they sweat.

An interesting perception emerged regarding the concept of beneficial physical activity in the morning, called 'morning walk'. All participants thought that only 'morning walk' is beneficial to control the blood pressure. The participants who were busy in the morning did not have other exercise plans. A housewife put it in this way:

"I went for a week. I got head cold. I had severe headache, might be due to cold? I went early in the morning at around 5am. I have to go to kitchen at 7am. [I] have to go early in the morning, so I left as it was difficult. Otherwise, I used to go for morning walk. Now I drink lemon water every day, four to five glasses in the morning." (P1, female, FGD 7)

We also found a misconception that the morning walk is not necessary for lean people and is only needed for obese. One participant thought that a person with high blood pressure should avoid exercise as it warms the blood and therefore, increases pressure.

".... Morning walk can cause rise in blood pressure...body gets warmer..." (P1, female, FGD 1)

Two participant commented that there are no such solutions for the prevention and control of hypertension as it can happen to anyone. One participant put it this way:

"But we hear, those who do not drink alcohol, do exercise are also fat 'bhyatta bhayeko'. For example, our 'A' (name not mentioned), he does exercise, does not eat such things...now have paralysis...what is its worth now...he does exercise for two hours." (p5, male, FGD 5)

3 Barriers to treatment and follow up

Patients' accounts of barriers to treatment and follow up could be categorized into three main headings: (1) individual level barrier, (2) socio-cultural barrier and (3) health care related barrier.

3.1 Individual factors

3.1.1 Negligence

Patient's attitude of taking care of their own health was found to influence their decision to follow-up at health institutions and attempt lifestyle modification. The participants who did not seek health care reported that they did not care about their health or their life. A participant described her negligence when she said:

"I don't really care about my own life. Whatever happens, even if I die, I don't really care." (P1, Female, FGD 1)

3.1.2 Challenges in behavior modification

Although participants were aware of the benefit of lifestyle modification (diet and exercise), diet control was difficult because of food craving, taste, desire to eat when they see, and busy job schedules. Male participants reported addiction to alcohol and smoking as a barrier as they thought that they need to smoke and drink to relax and maintain their health. As one male participant said:

"I have pressure, even though I drink sometimes and it becomes alright. At home, I was told not to drink as I have pressure, but what to do? I get severe headache if I do not drink. It heals after I had it" (P7, male, FGD 1)

For exercise, participants frequently reported laziness and bad weather as reasons for not exercising. Housewives were often too busy with their chores. In addition, participants also stated comorbidities such as uric acid and musculoskeletal pain to limit their physical activities.

For example:

“I used to walk for 45 minutes to an hour in the morning. But I stopped since one and half month due to cold, but I will continue I will start from Falgun [mid-February]. I easily get cold, so I do no walk [in winter].” (P2, male, FGD 2)

3.1.3 Absence of symptoms

Absence of symptoms was frequently reported as a reason for not seeking health care and not sticking to lifestyle modification. Absence of symptoms was considered as feeling well. All participants believed that absence of symptoms such as headache, anger and dizziness indicates that their blood pressure is normal. Many said they could determine when their blood pressure raised based on these symptoms. For example, having a headache after drinking alcohol was often associated with having high blood pressure.

Furthermore, participants doubted if they had to take medicine because symptoms are acute and episodic. The participants who did not seek health care after diagnosis did not believe that they have hypertension. This could be epitomized by the following statements of participants:

“[My] pressure is not high. It’s not high...for two to four days, it was 130/100, 140/100 then decreased. I had headache today, I knew my pressure had increased, then I took medicine like cetamol [Paracetamol]. It gets cured by tomorrow or the day after tomorrow. So, [I] don’t have any reason to go [to health care]. (P1, male, FGD 6)

“I do not know what pressure is. I eat salty food, eat spices too, and eat everything in combine. Until now, I don’t know that I have got any disease.” (P2, female, FGD 2)

Participants who did not adhere to medication reported that they visit a doctor only when they feel their blood pressure is high.

“Sometimes I go, sometimes I do not go. One knows when the pressure gets high. I go for check-up when I know it.” (P2, male, FGD 4)

3.1.4 Perceived seriousness of hypertension

Hypertension is not considered serious unless there is a symptom or a complication. Several participants who did not seek health care had not informed their hypertension status to their families. Two participants said that hospital is only for big problems so they did not go to

hospital for hypertension. Patients usually visit local pharmacies or their neighbors who have blood pressure machine in order to check blood their pressure whenever they have headache or dizziness.

“We cannot ignore own health, but for a small problem [BP], I feel like, why to go [hospital]?, so I go to a medical shop [local pharmacy].” (P4, female, FGD 4)

3.1.5 Reluctant to take medicine

Many patients reported that they first try to control high blood pressure by changing diet and exercise to avoid medication. They believed that the medication should be started when all the lifestyle measures are not adequate to control the blood pressure. Echoing other’s voice, one participant stated:

“We should not take medicine of pressure [blood pressure] and sugar [diabetes]. We should control them ourselves [by lifestyle modification].” (P2, female, FGD 2)

The participants believed that the traditional and ayurvedic medicines help to reduce blood pressure. In addition, they thought that bitter food such as aloe vera, fenugreek, bitter guard, neem leaves, garlic, lemon, and sapindus help to control it.

Participants who were on medication used the traditional medicine as complementary to allopathic medicine. Some of them believed that this would prevent diabetes. Alternative medicine was thought to work better before starting allopathic medicine. During a group discussion, a non-adherent participant asked if she can quit the antihypertensive medicine:

“...it’s fine to take [ayurvedic medicine] when one has not started medication and the blood pressure is little high. Now I have already started the medicine but I am taking it now, so can quit [medicine] or not?”(P4, female, FGD 4)

3.2 Socio-cultural factors

3.2.1 Lack of family support

Many participants said it was difficult to change their diet when meals are cooked and eaten together. Some said their families ignore their needs or they do not have time to cook food separately.

“It’s like this, in our villages, we are quite busy with our works. It’s difficult if we cannot eat the same food...it’s difficult because of time. So, it’s difficult for us.” (P1, female, FGD 2)

3.2.2 Feasts and festivals

Several participants mentioned attending ‘feasts and festivals’ as barriers to controlling dietary habits. Though they wanted to avoid feasts, which serve food rich in fat and spices, they felt obligated to attend them for social reasons. Comments included:

“If [I] do not go, [they] will get angry. [I] don’t eat much, just little, and little.” (P4, female, FGD 4)

“One is to control diet...We have habit of eating diet rich in fats and spices. We need meat either in happiness or in sorrow....We eat meat more than fish. Meat affects even more. That food habit of ours is bad.” (P4, male, FGD 5)

3.2.3 Social drinking

Male participants had difficulty avoiding or reducing alcohol intake because it is expected when they get together with friends. Echoing others’ voice, one participant mentioned:

“The only thing we eat when we are with our friends is alcohol. When we gathered daily, we drink daily. And, sometimes we don’t gather, so do not drink for a month (giggle). It happens like that.” (P2, male, FGD 3)

3.3 Health care related factors

3.3.1 Lack of patient-provider communication and trust on provider

It was evident that there was poor communication and lack of trust between the patients and the health care providers. In all FGDs, the communication gap was overwhelmingly reported as a barrier to follow-up and adherence to treatment. A majority of participants complained that

doctors do not explain the causes and their nature of illness; as well as the importance of lifestyle modification. However, they were aware that the doctors are too busy. For example,

“Telling the truth, doctor told me...I checked my pressure. After checkup, I was told to take medicine. [He said], ‘You have pressure, so we give you simple medicine with low dose.’ Then I forgot to ask and he also forgot to tell me. [...]I was not told anything. So, I am telling the truth, I asked people who has heart disease to get the information regarding what food to eat, which food increases it, and which food controls pressure.”(P2, male, FGD 5)

We explored their knowledge on salt consumption and exercise. Participants were not aware how much exercise is adequate and how much salt was too much. Regarding exercise, participants gave varied answers in terms of distance or time. Few of them mentioned that there is no boundary of exercise and it depends on their schedule. For salt, many said that they use their own concise and eat less than before they used to. One participant mentioned that adding water would reduce amount of salt.

‘The lentils were salty, [I] added water and ate’. (P1, male, FGD 4)

The participants preferred to see senior doctors and did not like consultations from medical students. Two participants were dissatisfied that they did not get to see the doctor of their choice, even after waiting for hours. Some participants thought that it was okay if they could not see the doctors of their choice as long as there was a qualified doctor to see them.

Some participants mentioned that health providers were unwelcoming, which limits their visit to health institution:

“Sometimes these things happen...[they] say something that we don’t know. So, when we don’t know, we get confused. We don’t know where to go and who to ask. We feel like it was worthless to go there, it was not good, there was no need to go there or feels like not to go there again. We feel like that. That is why we go away ...” (P4, female, FGD 4)

Several participants reported long waiting hours as an inhibitory factor. The length of waiting period varied from two hours to a whole day depending upon their investigation needs. One participant noted:

“Yes, it takes a whole day. If we have to check that blood, urine and others, then they will give report only after 2pm. And, they go for lunch at 1pm. Then after taking report, we need to find a doctor to show them. That’s why, it takes a whole day, just to measure one pressure. It takes whole day even if we come. So, its laziness.” (P2, female, FGD 4)

3.3.2 Affordability of treatment

Two participants who had never sought health care talked about the financial barrier.

“Even if I feel like going, money does not come for free, so what to do? If I go to hospital it requires money. And, even if I go to see traditional healer, I need to pay money. So, why should I go?” (P1, female, FGD 2)

The affordability was more of a concern for women who were financially dependent on their husband or other family members. One female participant who was on medication stated:

“Well, the expense...its husband’s...I don't have earnings....sometimes I feel awkward. Why should I feel awkward with my own husband, though it’s embarrassing to keep asking.” (P2, female, FGD 4)

4 Facilitators to treatment and follow up

4.1 Individual factors

4.1.1 Fear of consequences

The participants who continued to seek health care and who were adherent to medication reported that their main motivation was the fear of health consequences from uncontrolled blood pressure. The participants who had seen health consequences in their own family or community were more motivated to adhere to treatment. Comments included:

“I was suddenly frightened (group laughter). Till that time, I had no problem. Well, your sisters from this hospital came to my home. I did not know about blood pressure till then. I have never had a checkup. Then you guys checked, and it was found during checkup. Then you said that I have blood pressure, I became very afraid if something would happen to me. It was said that people with hypertension might have a paralysis. So, I was very afraid. Then I came to hospital and did checkup.” (P2, male, FGD 5)

“In my case, first of all, my mother had it. She had paralysis. Then my father had it. And, then my elder brother had it, elder sister had it. This ‘raktachap’, this hypertension is in my family history. That’s why, I should say I am a bit more careful. I go for timely checkup.” (P4, male, FGD 5)

4.1.2 Self-awareness and self-care

In all FGDs, participants emphasized that the patients themselves should be careful about their disease. Here is how one participant explained:

“But it is for our body. Others won’t do for our body. Should be done by ourselves. If not controlled at once, we can control it slowly and slowly.” (P2, male, FGD 5)

4.1.3 Self-reminding strategies

The presence of a routine was an important facilitator to medicine adherence. Participants mentioned that carrying their medicine every day, managing their time in relation to medication schedules, and keeping medicine by bedside helped them to remember.

4.2 Social factors

4.2.1 Family support

Family support was discussed in all FGD. The participants stated the importance of family support to modify the lifestyle; to take medicines; and seek health care especially for elderly patients. Here is how one participant described the support he received from his family:

“I don’t feel like eating with less salt, but my daughter cooks food with less salt thinking that her father has disease and if he eats more salt, it will increase it [BP]. ...I take medicine at 8pm. I do not remember while watching TV. I keep on doing other things. My daughter then ask me, ‘it’s already 8, have you taken your medicine?’ then, take it.” (P2, male, FGD 4)

Family pressure also helped male participants to reduce their alcohol intake. Echoing the voice of others, one participant said:

“[We] can. For example, I feel bore when I am told not to drink more. Like, I used to drink half, now I stepped down to quarter. Family gives pressure, like my wife says why I should drink. Then I also feel what difference would it make if I do not drink for one two days and then leave it.” (P7, male, FGD 1)

4.3 Health care related factors

4.3.1 Counseling by health care provider

In all FGDs, participants stated the importance of counseling to understand the cause of the disease, its consequences, treatment, and control measures. Counseling and building trust with the health care provider can influence patients' level of confidence and motivation to lifestyle modification and medicine adherence.

There was just a participant who frankly and repeatedly praised his doctor for giving him enough time during consultation:

“I told you, we cannot see him before two hours though we reached earlier. He has such a good habit, please do not mind that I am telling about him a lot, what he does is that he gives half an hour to every patients. He goes thoroughly through the paper to check when he started, then asks us, and then confirms. If he doubts, then he measures pressure. He confirms it and then prescribes medicine.” (P2, male, FGD 4)

Hypertension: providers' perspective

5 Burden of hypertension

The health providers identified hypertension as a common and rising problem in the community. A medical officer working in the hospital reported diagnosing at least two to three hypertension cases per day. The primary health care center refers the cases to tertiary hospitals when they suspect hypertension. All health care providers reported that the majority of patients are of age 40 years and older, but they sometimes see some younger patients. The medical officer in a primary health center noticed higher number of male patients compared to females, whereas other health providers reported male to female ratio of 1:1.

6 Patients' hypertension knowledge:

Health providers were asked about patients' knowledge of hypertension. They commented that the majority of patients, especially the newly diagnosed, do not have adequate knowledge about the causes and complications of hypertension. The knowledge is lower in uneducated patients. Health providers further commented that most people do not know the normal BP range. The non-medical health care providers were also not aware of hypertension themselves. One FCHV thought that the hypertension is a side-effect of diabetes, whereas an officer from the DHO reported that hypertension was caused by overuse of pesticides.

7 Barriers to treatment and follow up

7.1 Individual factors

Patients' negligence of their own health, especially among uneducated patients, was frequently reported as a barrier to follow up and medication adherence. Health providers stated that some patients do not follow the medical advice and thus land up in the emergency department.

“In my personal experience, I have seen those with hypertension retinopathy landed up with hypertension emergency. Educated are little aware of it, but those who are uneducated, it is little difficult to counsel.” (Medical officer, PHCC)

Patients’ difficulty to modify diet due to food taste, and smoking and alcohol addiction were also verbalized by health providers. They were more concerned with smokers and alcohol drinkers:

“They don’t say no...when they come for follow up we probe and they tell us (giggle). We offered advice not to do this and that. Next time again when they come to the OPD set up, we smell alcohol from the person whom we advised for quitting alcohol. It happens like that.” (Medical officer, PHCC)

Health workers mentioned that laziness and busy schedules were the two most important barriers to physical activity for patients. They also thought that absence of symptoms prevents patients from initiating and adhering to medication. They felt that this is especially challenging, as patients do not want to start medicine because of absence of symptoms, and they often stop treatment when their blood pressure becomes under control.

“[They] take medicine and leave it feeling that they are well. They don’t come up. There is no point to come for follow up.” (Medical officer, tertiary hospital)

Their patients did not take hypertension as a serious disease, so they chose to visit to a local pharmacy instead of a hospital. They think that hypertension is not taken seriously until there is a complications:

“They said like it’s a little increment, nothing will happen. We tell them that you have to go, it would be a danger, they said it’s normal,” (In-charge, Urban Health Care Center)

Furthermore, providers commented that patients were afraid of taking medicine for the rest of their lives, and thus, try to avoid taking medicine through diet control and exercise. They said that when patients have faith in alternative medicine, it is difficult for them to be convinced to start the antihypertensive treatment. As per health provider’s experience, such patients land up in the emergency room with complications.

“We have found many cases who landed up in the emergency with high blood pressure. When asked what medicine you are taking, they answer that they know their blood pressure is high and are taking herbal medicine and other different kinds of answers.”
(Medical officer, tertiary hospital)

The FCHVs reported that people believe in traditional medicine. They encountered many patients who told them that their hypertension is controlled or cured without taking medicines.

7.2 Socio-cultural factors

The health workers mainly discussed two barriers: First, lack of family support and Second, a culture of eating together with family. They mentioned that older patients need family support to travel to the hospital.

Health workers noticed that ‘feasts and festivals’ prohibit participants to stick to the healthy diet.

The in-charge of urban health center reported that hypertension is higher among Newar, a Mongolian ethnicity, because they celebrate many festivals. A medical officer further added that drinking is socially acceptable among Mongolians.

“For example, there are other social factors, usually Mongolian people, they take alcohol occasionally. So socially they are adaptable and receptive too. When asked to stop drinking, they stop it for one or two days, then again continue.” (Medical officer, PHCC)

7.3 Health care related factors

7.3.1 Lack of patient-provider communication and trust in provider

The providers reported that there is a lack of communication, especially in the tertiary level hospital. The doctors working in the hospital admitted that they could provide a maximum of 15 minutes to a newly diagnosed case and 5 minutes to an old cases, which they felt was not enough for counseling patients. Health workers working in the PHCC and UHCCs were not satisfied on counseling provided to patients from tertiary hospital. As reported, the hospital uses Amlodipine as the drug of choice as it is affordable to patient. The doctor working in the PHCC reported that

patients often complain of side effects, such as swelling of legs, from Amlodipine,. However, the medical officer from the hospital claimed that he had rarely seen patients with side-effects in his OPD:

“Patient either have to come with a complain of side-effect in my OPD...their only complain is that once medicine is taken, it should not be discontinued. Well, if they come with other rare complications like swelling of legs...otherwise, I don’t think there is a problem of side-effect. One major problem is potassium. Sometimes [patient] come with high potassium. Others are...” (Medical officer, tertiary hospital)

The lack of adequate counseling on lifestyle modification can be illustrated when one health provider said:

“We told them to eat less [salt] as much as possible. We have not told them how much to eat and how much to walk or run.” (In-charge, UHCC)

The World Health Organization (WHO) guideline for exercise is 150 minutes per week but this recommendation was not explicitly mentioned to patients. Patients were asked to do exercise or go for walk, but adequate information was not given on how they should exercise.

“Exercise should be done for 150 minutes in a week. That’s the WHO recommendation, we don’t tell it to patient. We asked them to exercise in the morning and evening. We asked for morning walk, evening walk.” (Medical officer, tertiary hospital)

Regarding salt consumption, the WHO’s recommendation for maximum allowable salt consumption is five gram per day. However, it is difficult to quantify at the personal level as most seasoning occurs when the food is being prepared by the cook. There was no mention of MSG in the discussions although Nepalese restaurants may use it for seasoning. So, patients are told not to add salt or take less than usual. Two doctors reported that it was difficult to counsel patients on salt consumption as they sometimes misunderstand. The health providers also reported encountering patients in emergency health care with low levels of electrolytes due to a complete restriction of salt.

Health providers also expressed long waiting time as a barrier to follow up in hospital. They reported it as a major reason for patients visiting to the local pharmacies.

Health providers thought that patient miss their appointment because they do not get to see the doctor of their choice, and they especially do not like to be seen by medical students. The medical officer who had noticed such cases shared his experience this way:

“I have noticed that patient do not feel comfortable because they say that another doctor is looking after their case. No matter its good or bad, they might have trust when they see them [doctor] in regular visit.” (Medical officer, tertiary hospital)

7.3.2 Affordability of treatment

Cost was another barrier for patients to initiate medication and have medical investigations performed. Because the diagnostic investigation to pinpoint target organ damage is costly, many newly diagnosed hypertensive cases reject it. In addition, patients have concern that they have to take the medicine for life, which create a substantial economic burden throughout their life.

“And next, it is difficult to start. Newly diagnosed cases neglect even if they were told by specialist to take medicine. That’s because if I take, I have to take it forever. And, some have low economic condition. They say that they cannot as taking medicine just for a month is not enough, they have to take it until they survive. Everyone cannot afford. We see it’s difficult to afford. Not many people, but few in number.” (Medical officer, PHCC)

7.3.3 Accessibility to care

None of the hypertensive patients stated inaccessibility to care as a barrier to them. However, health providers thought it was a barriers to follow up, especially among rural people:

“And, sometimes the medicines are not available when needed. It’s far. It’s far to bring medicine. If they go, they have to either go to Dhulikhel Hospital or reach to Dhulikhel [town]. There is nothing to buy here. So, if medicine gets over, it’s difficult for them.”(In-charge, UHCC)

7.3.4 Lack of resources for care in health institutions

Health workers felt that there was a lack of resources to manage hypertension, including guidelines, equipment and drugs. Nepal lacks standardized national guidelines for clinicians,

leading health institutions and providers to use different international guidelines based on their judgement. A medical officer in the primary health care center explained that the international guidelines might not be compatible for the people of Nepal. He expressed his disappointment this way:

“This makes a difference. That’s like, British’s have their own system, and Canadian’s have their own system. We don’t have ours in our set-up. That’s a demerit. I feel pity on it. Now, when they calculate all...when calculating BMI, it’s different for western and eastern. Generally, there is body structure, body physique, isn’t it? It’s different. They are tall, we might not be comparatively matched with them, but we are obliged to use that.” (Medical officer, PHCC)

Similarly, the medical officers in the tertiary hospital reported using the American Heart Association guidelines(39). They reported that they follow the guideline because they have to prescribe the cheapest drug. Another doctor preferred to have a standard protocol for hypertension management in all departments. Health providers reported that the patient’s adherence to treatment is self-report there do not have any protocols or questionnaires to measure it.

“The next lagging is that we do not have any kind of tool for assessment, not even a simple questionnaire. Like, how many days [patient] controlled salt or anything like table or routine to note down I ate more salt this day, I ate a lot this day or in party, we have nothing. We don’t have a proper evaluation tool.” (Medical officer, hospital)

The health workers working at the government health institutions commented on lack of equipment and drugs to manage hypertension cases. So, they have to refer the patients to the tertiary hospitals. There is no anti-hypertensive medicine available in the peripheral health institutions, which has compelled to discontinue medicine or not to start at all among patients of rural areas.

“The nearest one is health post. Health posts do not have medicines for pressure.” (In-charge, UHCC)

8 Facilitators of treatment and follow up

8.1 Individual level

8.1.1 Fear of consequences

The health workers repeatedly reported that fear of consequence leads to better adherence. They think that patient do not stick to the recommendation until they fear the consequences. Therefore, they repeatedly tell patients about the consequences of uncontrolled blood pressure.

“Every time it’s like... it’s like going to the church. Every time when they come, we should give an overview that it is under control, if not, this and that complications would happen. If it is said every time, then I think they would stick to the medication, both mentally and in real life.” (Medical officer, tertiary hospital)

8.1.2 Self-awareness and self-care

Two health providers emphasized that patients should be proactive in measuring their blood pressure and controlling diet. As one medical officer states:

“If one thought or determined to do, then everything is possible.”(Medical officer, PHCC)

8.2 Social factor

8.2.1 Family support

Providers unanimously conveyed that the support patients received from family, such as to modify their lifestyle, remind them to take treatment and accompanying elderly patients to appointments, facilitated patients’ treatment and follow-up.

8.3 Health care related factors

8.3.1 Availability of resources

Health providers at the tertiary level cited that affordable drugs helps medicine adherence. So, they start the treatment with the cheapest drug. They also provide brochure to all hypertensive patients to improve their knowledge on hypertension, its treatment and control.

8.3.2 Counseling by health care provider

Counseling was frequently reported by providers as an encouraging factor to motivate patients to change their behavior and adhere to medication and follow up. A medical officer observed that group counseling facilitated the behavior modification among diabetic patients in the hospital.

He, therefore, recommended that the counselling should be initiated for hypertensive patients.

“At first, it would be better if we could allocate one day from every regular visit for counseling. For example, we do diabetic counseling every Monday and Thursday. We call a majority of diabetic patients on those days. Similarly, for the hypertension, we can allocate two or three days for counseling and call patients for follow up on the same day and also to attend counseling. The good part of that is that in group counseling patient talk with each other in a group, which I think is better than individual counseling.”
(Medical officer, tertiary hospital)

He further suggested to maintain a simple diary and a dietary chart, which would facilitate counselors to monitor patients.

“Another is a simple diary in counseling, like which days we restricted salt...it’s better to evaluate by the one who does counseling than by us...if they honestly maintain a diary, then I think that would be better. And, so far, I think the first is counseling.” (Medical officer, tertiary hospital)

9 Suggestions to improve hypertension management

In all FGDs and IDIs, four strategies were suggested for the overall management of hypertension in the community: (1) increase awareness, (2) screening and routine monitoring of blood pressure, (3) make resources available in health institutions (4) provide training to health workers. The first two suggestions were mainly related to identifying unknown or hidden hypertensive patients in the community and bringing them to the hospital. And, the last two suggestion were focused to improving health care delivery system.

9.1.1 Increase awareness

As one medical officer from the tertiary hospital complained, *“We have seen many awareness of TB and HIV, but we do not see awareness on hypertension.”* participants in the FGDs and IDIs

suggested and felt the need of increasing awareness at the individual and community level. They strongly emphasized the necessity of education to prevent and control hypertension. As one participant mentioned:

“Education is very bold. If we give this continuously for one year, then after, Dhulikhel Hospital might not have to give it. Their sons and daughters will teach it to next generation.” (P2, male, FGD 3)

Participants suggested to deliver community awareness through different means such as clubs, schools, and health camps by utilizing various media like radio, frequency modulation, pamphlets, drama, and public figure and so on. It was suggested to take programs to villages and every corner of the communities. One participant suggested to create a forum capturing all the patients who are in regular contact of hospital where both doctors and patients could share their experiences.

9.1.2 Screening and routine monitoring of blood pressure

A medical officer working in the tertiary hospital described the importance of screening for hypertension when he said:

“At the very first, patient’s screening should be done. In fact, the disease that causes pain are good ones. When they have severe pain, they come to hospital. They take medicine when they have pain. For asymptomatic disease, they suddenly land up with complications.”

Screening and regular blood pressure monitoring in the community was highly recommended by all patients and health providers. A majority of participants suggested for conducting screening and regular blood pressure monitoring in the community, which would be beneficial to the people, especially for those who could not come to hospital because of financial issues. They further added that few campaigns regarding hypertension and diabetes had taken place in the community. And, the participation of community people was remarkable, so it should be continued. Majority of them wanted such programs frequently in every wards in 15 days to 6

months interval. Several of them strongly suggested to continue what the ‘Dhulikhel Heart Study’ program had done before like measuring blood pressure of each and every family members. One participant put it this way:

“The only solution is...well, like you...like before...like [you] came two three years ago and check blood pressure of all members...at least you do check for blood pressure or small check for diabetes...that should be continued. It should be done home to home in whole Dhulikhel, if not monthly then at least once in a year.” (P2, male, FGD 3)

Similarly, health providers suggested to conduct surveillance and research to identify new cases in the community. In addition, medical officers from the tertiary hospital strongly highlighted the need of routine blood pressure monitoring in every department of the hospital. The routine monitoring was only done by medicine, cardiology and several other departments on a regular basis, so they missed the opportunity to identify new hypertensive cases in the hospital setting.

One of them described:

“In seven hundred [patients], two hundred of them come to the medicine [OPD]. We missed the screening of remaining five hundred. Five hundred people missed screening daily, which means around five multiplied by three is fifteen hundred. Many missed their screening. That’s why, screening should be done in all who comes to the hospital. If that is done, many will be screened, many will be monitored.” (Medical officer, tertiary hospital)

9.1.3 Make resources available in health institutions

The government health workers demanded anti-hypertensive drugs in their set-up since there was no provision of supply from the central level. They suggested to put it in the essential drug list to facilitate patients to get it free of cost.

“In case of hypertension, it [medicine] is not in our supply. Nepal government has said to provide 70, 72 kinds of drugs, this has not been addressed there. This medicine should be listed there.” (FPO, DHO)

No budget was allocated in the district health office for the hypertension program. Because of this reason, there was no focal person appointed for the non-communicable disease and there was

no such programs being done in the community. However, they had appointed one person from the health education section to disseminate some information regarding NCD in the community. However, the FPO reported that they were advocating higher authority in the government for this issue.

In the hospital setting, the medical officers talked about setting up the information desk equipped with health materials related to hypertension and blood pressure machine, so whoever comes to hospital could check their BP and also gain some information regarding it.

9.1.4 Training to health workers

Peripheral level health workers felt the need of training since they have not yet received any training or orientation from the government. Since the government was still focused on communicable disease, health workers demanded training from the tertiary level hospital as the hospital was conducting many researches related to heart disease.

Additionally, the need of training was felt for those health workers who are involved in measuring blood pressure including those working in the medical shops. A medical officer noted:

“Instead of measuring blood pressure randomly, those who are measuring blood pressure should know about the small requirement of blood pressure measurement. One thing they should know while measuring blood pressure is that what should be the position, what the requisites are, and how many minutes of rest has to be done.”(Medical officer, tertiary hospital)

One of the FCHVs, who frequently visits home to home in the community for maternal and child health program, reported that community people frequently demanded for blood pressure measurement at their home so they did not have to hospital just for this purpose. The FCHVs also had demanded training from the higher authorities.

“And, I put this concern once in the [district] health office. We also said this in municipality. [Name of the person not mentioned] Sir laughs when we asked to teach us how to measure blood pressure so that we can also say about it. Yes, [he] said like that.”

I want to learn. It's not only me, we are 28 in total, and all twenty eights' have that aim. I wish I could learn. We also had discussion last time.” (FCHV)

When asked regarding the involvement of FCHVs in hypertension management in the community, all other health providers agreed on the vital role that they could play for it, as they are the one who visit to every household in the community. So, they could be mobilized in measuring blood pressure at home and disseminating information up to the grass root level. The medical officers from the hospital emphasized home blood pressure monitoring as of utmost important. Furthermore, the in-charge of one urban health care center reported that they have been using FCHVs for monitoring hypertension patients in the community.

“We are mobilizing FCHVs for this purpose. We told them that this person has this and ask them to monitor. It's not possible for us, we cannot visit home to home. We are busy with our work from 10 to 4pm. And, another is that we have meeting on the first day of every month. We tell them that we have found this [case] in your area.” (In-charge, UHCC)

5. DISCUSSION

In our study, hypertension was perceived as a common and rising problem in the community. Patient's inadequate knowledge of hypertension's asymptomatic nature and need for long term medication use resulted in a low level of perceived seriousness of treatment and follow up. Health providers generally resonated the voices of patients. However, they undervalued the deep-rooted belief that hypertension can be cured with short-term medicine intake. The main barriers to treatment adherence were absence of symptoms, reluctance to take medicine, perceived seriousness of the disease, lack of communication and trust with the provider, and lack of resources. The main challenges to modify diet were food taste, smoking and alcohol addiction, eating together with family, feasts, festivals and social drinking. The main barriers to physical activity were laziness, weather and busy work. The facilitators to treatment were fear of consequences, self-awareness and self-care, reminding strategies, family support, counseling by health providers, and availability of resources. Participants felt need for awareness and screening in the community. Health providers felt the need for the training.

The participants had varied understanding of high blood pressure, its causes, symptoms and complications, and only a few of them associated it with increase in heart beat and blood flow fluctuation. Similar to our finding, a study from Canada also reported that the patients struggle to define hypertension(16). In our study, health care providers were not aware of the patients' knowledge on the causes and complications of hypertension. The participants knew much more than the providers thought they knew. Stress was reported as a major cause of hypertension. Studies reported that when patients view stress as an underlying cause of hypertension, they are

more likely to take disease as an acute and episodic, and thus are non-compliant to treatment than others (26, 27, 40).

A major barrier to seek care was the absence of symptoms. None of the participants were aware that the HTN could be asymptomatic, which is similar to another study from Malaysia (40). Like in other studies, asymptomatic patients considered themselves healthy (15, 22, 26, 40, 41). In low resource settings, many people do not visit health care providers until they feel the symptoms (15, 26). Similar to our findings, participants from rural Nigeria and the US related high blood pressure with their symptoms. They changed their diet and seek health care based on their symptoms (15, 25, 26). The asymptomatic nature of hypertension also complicates the communication between the patients and the health providers. Patients do not trust the providers when the provider prioritizes the treatment based on risk factors and the patient's priority is to treat the symptoms(26).

Patients' belief also contributed to behavior change. Participants in this study had several misbeliefs regarding hypertension, such as hypertension can be cured; it is not hereditary; medicine can be discontinued when the blood pressure is normal; and traditional medicines works better than allopathic. These beliefs contributed to poor medication adherence and discontinuation of the medical care, which have also been reported in the other studies from Columbia, South Africa and Nepal (13, 23, 24). Furthermore, patients preferred lifestyle modification to medication due to fear of having to take medicine for life. This is one of the most important barriers to start and adhere to medication in this as well as other studies (26, 42).

Hypertension was perceived as a normal disease in the community. The finding is congruent with other studies (35, 43-45). Many participants in our study perceived hypertension as a

serious disease, unlike another CVD perception study in Nepal (18). However, the finding coincides with the studies from Nigeria (25) and the US (22). The providers stated that the patients often neglect their disease at an early stage. It was evident from our study that patients prefer local pharmacies to hospital care for high blood pressure due to lack of knowledge on seriousness of the disease. The negligence of disease might also be due to depression, as one participant said that she does not care about her life at all. A nationwide cross-sectional study among adults aged 18-65 years (2016) reported 11.7% depression prevalence in Nepal. A hospital based study on prevalence of undiagnosed depression among persons with hypertension and associated risk factors in urban Nepal (2015) reported increased risk of depression among hypertensive patients who are not taking anti-hypertensive medicine.

A study among patients under anti-hypertensive medication in Canada reported that the lack of habit and routine for medication use as barriers to medication adherence(16). This study also identified that patients forget medication when they travel, have busy work and feel lazy. Keeping reminders was reported to be effective for medication adherence. None of the participants reported any side effects in our study, but it was a main barrier identified in other (27).

In consistent with other studies (16, 23, 46), health providers in this study reported cost as a barrier for seeking health care, life-style modification and medication adherence. However, very few participants were concerned about the cost. In a study from rural Nigeria, free access to medicine was an important facilitator for medicine adherence (25). Other studies also showed that the poor patients without an insurance were more likely to be non-adherent to the treatment (23, 40). Another barrier that was reported by both the patients and the health providers was a

long waiting hours at the hospital, which was also reported in another study done in Nigeria (25). Providers commented that patients often deny investigations to diagnose target organ damage due to cost. However, the presence of end organ damage such as left ventricular hypertrophy does not change the need to start treatment with medications for people with hypertension not responsive to diet and exercise, or stage 2 hypertension. Therefore, patients' inability to pay for end organ damage should not affect hypertension treatment as they needed to be prescribed medicines anyways.

Adequate physical activity and healthy diet prevent and control hypertension (8, 47). Although the participants in this study were aware of healthy lifestyle changes, they did not practice it. This knowledge-practice discordance has also been reported by the other studies.(18, 23, 24, 41, 48). The main barriers to diet modification were food taste, craving, smoking and alcohol. Additionally, health providers mentioned social barriers to diet modification such as eating together with family, feasts and festivals and social drinking. Furthermore, participants had several misconception regarding exercise and diet. They believed that only morning walks are effective physical activity for controlling the blood pressure; patients with high BP should not exercise; and adding water reduces sodium when the food is salty. This indicates low level of awareness among patients as well as lack of counseling from providers.

In other studies, lack of counseling and patient-provider trust were reported as barriers to treatment adherence (23, 26). In our study, it was surprising that the patients who were on medication did not know how often to visit health care and the importance of regular medicine intake. Their knowledge and belief on medication was not different than those who did not seek the health care. This indicates that there is a plenty of room for improvement in counseling.

Our study also revealed that building trust is necessary to create a friendly environment for effective patient-provider communications. Other research has shown that the patients trust the health care professionals who are caring, affectionate, respectful and empathetic (23, 33).

However, a major limitation to counseling found by this study as well as other studies was lack of the provider's time (23, 33). Furthermore, the follow up of patient was also depend upon the patient's preference of having same doctor or experts to manage their cases, which is consistent with other studies (23, 32, 40).

This study has also provided insights into the management of hypertension in Nepal. Though the problem of NCD is rising, the government has not put much of an effort on public awareness and screening. The health workers in the government sectors refer patients to tertiary care and other centers due to lack of the required equipment and medicines. A systemic review by Khatib et al. reported that shortage of equipment, space and staff are mainly reported by providers as barriers in low and middle income countries(11). Furthermore, the lack of the national guideline on hypertension management and inadequately trained health workers contributed to the low quality of care. The coordination between the guideline and training of health workers is essential to deliver similar and sustained message throughout the health system(41).

Our study revealed that facilitators of behavior modification and medication adherence were fear of consequences, reminder strategies, self-awareness and self-control, family support, counseling by health providers, and availability of resources. The study from Nigeria showed that 86% of patients comply with doctor's appointment in the fear of the complication and the desire to control the blood pressure (27). The importance of self-management and control was also reported by African-American women in another study (46). Odusola et al. 2014 emphasized the

role of family (25). In our study, patients consulted the prevalent chronic disease patients in the communities. This echoes the fact that the people in community interact with each other and demonstrates the need of family and community education on hypertension.

Strengths and limitations

This is the first qualitative study of its kind in Nepal, which aimed to explore barriers and facilitators to treatment among newly diagnosed hypertensive patients in a sub-urban community of Nepal. The use of open ended questions helped to gather rich information on participants' views and experiences. The study was constructed on the direct experience of patients and providers. We have included varieties of patients: those who did not seek care, those who were compliant, and who did not adhere to the treatment. This helped in getting in-depth understanding of barriers and facilitators from different perspectives in the society. In addition, we also interviewed health providers to get better understanding of health-care related factors.

However, several limitations should be considered. The exploratory nature of this qualitative study, confinement to the DHS participants, and small sample size limit the generalizability of our findings to other population. The study participants are from a sub-urban area, so it is probable that the findings may not be representative of other newly diagnosed patients in urban or rural areas. However, qualitative study is designed to understand phenomenon, and not to measure variables(24). There were more male participation in our study. Although men may hold different views, we did not find remarkable differences between male and female opinion. There were few health providers but care was taken to include the providers from the different health care levels. Since patients were newly diagnosed, it had not been a long time since they had

started medication. So, it is possible that there might be other medication related barriers that we could explore from previously diagnosed cases.

Despite these limitations, our study has provided in-depth view of personal, social and health care related facilitators and barriers to hypertension management in Nepal.

6. CONCLUSION

In this suburban community of Nepal, there was inadequate knowledge among hypertensive patients. Patients believed that hypertension is curable and did not take it seriously. The major barriers to treatment were absence of symptoms, reluctance to take medication, low perceived seriousness, lack of patient-provider communication and trust on provider, difficult to modify existing habit for diet control, and lack of family support for behavior change. The role of health providers was tremendously important to facilitate patients to adhere to treatment. The availability of resources such as national guideline, medicines, equipment and assessment tool would help providers to manage the hypertension in the community.

7. RECOMMENDATION

This study has identified the existing inhibiting and facilitating factors that can be addressed to manage hypertension in Nepal as well as in other resource constraint settings. Specific interventions that may be useful are provided below:

1. Given patients' inadequate knowledge and belief about hypertension among patients, and the need expressed by both patients and providers for awareness campaigns, it is suggested that culturally appropriate health information be developed and disseminated to the community with special focus on the asymptomatic and temporary nature of hypertension; importance of regular medication intake; and consequences of hypertension. Dissemination of information

through media, such as newspapers, radio, television and frequency modulation, newspapers as well as awareness campaigns would be beneficial. The creation of a forum including both hypertensive patients and health care providers would form a platform to share patients' problems and experiences, deliver education, and improve patient-provider communication.

2. The role of the health care providers is vital to improving patients' knowledge and change existing misbelief in the community. Therefore, it is essential to train health workers on hypertension management along with counseling skills. Because FCHVs already worked at the community level, it is recommended that they be equipped with training and tools needed to raise awareness in the community, screen patients by using electronic blood pressure cuffs during household visits, and identify potential hypertension cases.
3. Regular screening is important to find out undiagnosed cases of hypertension in the community. Given the number of patients who did not seek care after being diagnosed as hypertensive, it is of the utmost importance to closely follow and encourage these patients to visit the hospital for further evaluation.
4. Structured counseling sessions along with assessment tools should be developed by health institutions. The presence of family members in counseling sessions is important to address socio-cultural barriers as identified by this study. Emphasis should be given to patients' self-management of disease, such as monitoring blood pressure at home. It is important that patients know their blood pressure number as well as the normal blood pressure range. Care should be taken that the hypertensive patients do not discontinue treatment when the blood pressure becomes normal.

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9. APPENDIX 1

List of themes, categories, sub-categories and concepts

Theme 1: Burden of hypertension		
Categories	Sub-categories	Concept
Prevalent cases		<ul style="list-style-type: none"> Hypertension is a rising problem in the community
Characteristics of patients		<ul style="list-style-type: none"> Hypertension is prevalent in adults >40 years of age with equal male and female ratio of 1:1.
Theme 2: Knowledge on hypertension		
Categories	Sub-categories	Concept
Meaning of hypertension		<ul style="list-style-type: none"> Patients mainly related hypertension with its causes, symptoms and complications No idea on normal blood pressure range
Causes of hypertension		<ul style="list-style-type: none"> Mixed opinion on causes, mainly linked with diet Providers think that patients had no adequate knowledge on hypertension cause
Complications of hypertension		<ul style="list-style-type: none"> Mainly reported complications are heart disease, paralysis and eyes problem Providers think that patients had no adequate knowledge on hypertension complications Patients having family members with chronic disease have more knowledge on consequences
Hypertension treatment		<ul style="list-style-type: none"> Hypertension is viewed as a curable disease

Theme 3: Barriers to treatment and care

Categories	Sub-categories	Concept
Individual factor	Negligence	<ul style="list-style-type: none"> • Patient's carelessness attitude towards own health
	Challenges in behavior change (diet and exercise)	<ul style="list-style-type: none"> ➤ <u>Diet control is difficult due to:</u> <ul style="list-style-type: none"> • existing habit due to taste, food crave, desire to eat when they see food • job nature such as service or hotel business • addiction to smoking and alcohol ➤ <u>Exercise</u> <ul style="list-style-type: none"> • Difficult to go for exercise due to cold weather, laziness, busy work and disease condition • View that exercise is dangerous for hypertensive patients • View that exercise is for lean and thin people
	Absence of symptoms	<ul style="list-style-type: none"> • Feeling of well, no symptoms
	Perceived seriousness to disease	<ul style="list-style-type: none"> • Disease is normal and do not harm until there is symptom or complication
	Reluctant to take medicine	<ul style="list-style-type: none"> • Fear of dependent on medication • Believes on traditional medicine
Socio-cultural factors	Lack of family support	<ul style="list-style-type: none"> • Eating together with family • Lack of support in getting and adhering to treatment
	Feasts and festivals	<ul style="list-style-type: none"> • Uncontrolled diet in feasts and festivals
	Social drinking	<ul style="list-style-type: none"> • getting together with friends • drinking is socially and culturally acceptable in Mongolians
Health care related factors	Lack of patient-provider relationship	<ul style="list-style-type: none"> • Lack of counseling • Limited time of providers • Patient's preference to see senior doctors or experts • Provider's negative behavior
	Affordability of treatment Accessibility to care	<ul style="list-style-type: none"> • Inability to pay for drugs • Inability to pay for investigations • Difficulty in getting to health institution because of lack of transportation, and long distance.

Theme 4: Facilitators to treatment and care

Categories	Sub-categories	Concept
Individual factor	Fear of consequences	<ul style="list-style-type: none"> • Fear of complications and death • Patients with family history of hypertension are more compliant
	Self-awareness and self-care	<ul style="list-style-type: none"> • Self-motivated attitude to control and manage own disease
	Self-reminding strategies	<ul style="list-style-type: none"> • Use of reminders such as mobile, creation of daily routine for medicine intake, and time management
Social factor	Family support	<ul style="list-style-type: none"> • remind patient for medicine • support in getting treatment and follow up • support in diet control
Health care related factor	Counseling by health providers	<ul style="list-style-type: none"> • Time provided by providers to explain regarding hypertension in detail
	Availability of resources for care	<ul style="list-style-type: none"> • Availability of medicine in cheap price • Availability of health materials on hypertension

Theme 5: Suggestions to improve hypertension management

Categories	Sub-categories	Concept
Increase awareness		<ul style="list-style-type: none"> • Increasing awareness in community through different means and media • Increase awareness within the health institution premise
Screening and routine check-up		<ul style="list-style-type: none"> • Regular screening to identify new cases • Regular blood pressure monitoring in different departments of hospital
Make resources available in health institutions		<ul style="list-style-type: none"> • Presence of national guideline or institutional protocol • availability of drugs, if possible free of cost • Availability of diagnostic equipment in health institutions • Availability of assessment tool to monitor lifestyle modification and treatment adherence
Training to health workers		<ul style="list-style-type: none"> • Training to peripheral level staff on hypertension management • Training to health workers from local medical shops
